A sequence is defined by the recurrence relation $u_{n+1} = \frac{1}{3}u_n + 10$ with $u_3 = 6$.

(a) Find the value of u_4. **1**

(b) Explain why this sequence approaches a limit as $n \to \infty$. **1**

(c) Calculate this limit. **2**

Answers:

(a) 12

(b) Linear recurrence relation and $-1 < \frac{1}{3} < 1$.

(c) 15